Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A circuit for realizing a non-linear reactive elements scale network, comprising:

a plurality of non-linear elements of the network acting as inductive and capacitive components cascade connected between a pair of input terminals and a pair of output terminals, each component of the network being formed by cascade connecting a first and a second transconductance integrator with each other, each integrator having a bipolar transistor input circuit portion and a MOS transistor bias circuit portion, and having at least one output of the second integrator feedback connected to the bias circuit portion of the same integrator through a feedback block.

2. (Canceled)

3. (Previously Presented) The circuit according to claim 1 wherein said feedback block provides a voltage reference for said bias circuit portion.

4. (Currently Amended) A circuit for realizing a non-linear reactive elements scale network, the circuit comprising:

a plurality of non-linear elements of the network acting as inductive and capacitive components cascade connected between a pair of input terminals and a pair of output terminals, each component of the network being formed by cascade connecting a first and a second transconductance integrator with each other~~–~~, ~~the~~ outputs of the first integrator being connected to ~~the~~ inputs of the second integrator and being coupled to ground by respective diodes.

5. (Currently Amended) A circuit for realizing a non-linear reactive elements scale network, the circuit comprising:

a plurality of non-linear elements of the network acting as inductive and capacitive components cascade connected between a pair of input terminals and a pair of output terminals, each component of the network being formed by cascade connecting a first and a second transconductance integrator with each other, outputs of the first integrator being connected to inputs of the second integrator and being coupled to ground by respective diodes; and

differential outputs respectively coupled to ground through a stabilization capacitance.

6. (Original) The circuit according to claim 1 wherein the first and the second integrator have the same transconductance.

7. (Previously Presented) A circuit for realizing a non-linear reactive elements scale network, comprising:

a plurality of non-linear elements of the network acting as inductive and capacitive components cascade connected between a pair of input terminals and a pair of output terminals, each component of the network being formed by cascade connecting a first and a second transconductance integrator with each other, wherein each pair of integrators implements the following equation, in order to emulate a capacitor, or a similar equation with L indexes in order to emulate an inductor:

$$I_C = \frac{C_0}{1+\left(\frac{V_C}{V_0}\right)^2}\frac{\partial V_C}{\partial t} \Rightarrow \frac{1}{C_0}\int I_C\left[1+\left(\frac{V_C}{V_0}\right)^2\right]dt = V_C \qquad (4)$$

8. (Original) The circuit according to claim 1, wherein the plurality comprises at least twenty inductive and capacitive components.

9. (Currently Amended) A circuit, comprising:

a circuit input;

a plurality of non-linear inductor simulation components, each having an input and an output, the input of the non-linear inductor simulation components being coupled to the circuit input;

a plurality of non-linear capacitor simulation components, each having an input and an output;

a coupling from an output of at least one of the non-linear inductor simulation components to the input of at least one of the non-linear capacitor simulation components;

a coupling from an output of at least one of the non-linear capacitor simulation components to the input of at least one of the non-linear inductor simulation components; and

a circuit output coupled to the output of the non-linear capacitor simulation components; ~~and,~~

at least one diode coupled between the output of at least one of the non-linear inductor simulation components and ground; and

a common mode feedback circuit coupled to the circuit output.

10. (Canceled)

11. (Original) The circuit according to claim 9, further including:

a feedback circuit coupled to the circuit output in order to provide a reference signal level for the feedback.

12. (Original) The circuit according to claim 9 wherein the circuit input is a differential input.

13. (Currently Amended) The circuit according to claim 9 wherein at least one of the inductor simulation ~~circuit~~ components includes bipolar transistors.

14. (Currently Amended) The circuit according to claim 9 wherein at least one of the inductor simulation ~~circuit~~ components includes MOS transistors.

15. (Currently Amended) A circuit, comprising:

a circuit input;

a plurality of non-linear inductor simulation components, each having an input and an output, the input of the non-linear inductor simulation components being coupled to the circuit input;

a plurality of non-linear capacitor simulation components, each having an input and an output;

a coupling from an output of at least one of the non-linear inductor simulation components to the input of at least one of the non-linear capacitor simulation components;

a coupling from an output of at least one of the non-linear capacitor simulation components to the input of at least one of the non-linear inductor simulation components; and

a circuit output coupled to the output of the non-linear capacitor simulation components;

at least one diode coupled between the output of at least one of the non-linear inductor simulation components and ground; and

a disk drive read channel signal line coupled to the circuit input to provide data stored on a disk drive to the circuit.

16. (Currently Amended) A method of simulating a capacitive and inductor network, the method comprising:

receiving a differential input signal from a disk drive read channel at a simulated non-linear inductor circuit having bipolar transistors;

integrating the input signal to simulate a non-linear inductor and outputting the results;

receiving a differential input signal from the output of the non-linear inductor at a simulated non-linear capacitor circuit;

integrating the differential input signal to simulate a non-linear capacitor; and

outputting the integrated capacitor signal as the output of the circuit.

17. (Original) The method according to claim 16, further including:

feeding back an output from the capacitor circuit to at least one input of the inductor simulation circuit.

18. (Canceled)

19. (Currently Amended) A circuit for realizing a non-linear reactive elements scale network, the circuit comprising:

a plurality of non-linear elements of the network acting as inductive and capacitive components cascade connected between a pair of input terminals and a pair of output terminals, each component of the network being formed by cascade connecting a first and a second transconductance integrator with each other, each integrator having a transistor input circuit portion and a transistor bias circuit portion, and having at least one output of the second integrator feedback connected to the bias circuit portion of the same integrator through a feedback block, each of the components having differential inputs and differential outputs, with an output of the network being a differential output.

20. (Currently Amended) A circuit for realizing a non-linear reactive elements scale network for data of a disk drive output, the circuit comprising:

a differential signal line pair coupled to the output of a disk drive signal line pair;

a plurality of non-linear elements of the network, at least one of the elements having an input coupled to the disk drive signal line pair, the elements acting as inductive and capacitive components cascade connected between a pair of input terminals and a pair of output terminals, each component of the network being formed by cascade connecting a first and a second transconductance integrator with each other, outputs of the first integrator being connected to inputs of the second integrator and being coupled to ground by respective diodes,

each of the components having differential inputs and differential outputs, with an output of the network being a differential output.

21. (Currently Amended) A circuit, comprising:

a differential circuit input;

a plurality of non-linear inductor simulation components, each having a differential input and a differential output, the input of the non-linear inductor simulation components being coupled to the circuit input;

a plurality of non-linear capacitor simulation components, each having a differential input and a differential output;

a coupling from an output of the non-linear inductor simulation components to an least one input of at least one of the non-linear capacitor simulation components;

a coupling from an output of at least one of the non-linear capacitor simulation components to an input of at least one of the non-linear inductor simulation components;

at least one diode coupled between the output of at least one of the non-linear inductor simulation components and ground; and

a differential output pair of signal lines being provided at the output of a non-linear capacitor simulation component.